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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/623,967      | 07/21/2003  | Zheng Lu             | MEMC 02-0400 (3053) | 5338             |

321 7590 01/24/2005

SENNIGER POWERS LEAVITT AND ROEDEL  
ONE METROPOLITAN SQUARE  
16TH FLOOR  
ST LOUIS, MO 63102

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| EXAMINER |
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HITESHEW, FELISA CARLA

|          |              |
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| ART UNIT | PAPER NUMBER |
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1765

DATE MAILED: 01/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/623,967

Applicant(s)

LU ET AL.

Examiner

Felisa C. Hiteshew

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1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 9, 12 and 19 is/are rejected.
- 7) ☒ Claim(s) 2-8, 10, 11, 13-18 and 20-23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/623967.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

***Information Disclosure Statement***

The Information Disclosure Statement under 37 C.F.R. 1.97 has been received and reviewed. However, the information disclosure is not deemed to be pertinent over the prior art of record.

***Claim Rejections - 35 USC § 112***

1. Claim 1 recites the limitation "...Czochralski process..." in line 2. There is insufficient antecedent basis for this limitation in the claim. Please insert the word - a - before the word "Czochralski" for proper antecedence.
2. Claim 9 recites the limitation "...Czochralski process..." in line 2. There is insufficient antecedent basis for this limitation in the claim. Please insert the word - a - before the word "Czochralski" for proper antecedence.
3. Claim 121 recites the limitation "...Czochralski process..." in line 2. There is insufficient antecedent basis for this limitation in the claim. Please insert the word - a - before the word "Czochralski" for proper antecedence.
4. Claim 19 recites the limitation "...Czochralski process..." in line 2. There is insufficient antecedent basis for this limitation in the claim. Please insert the word - a - before the word "Czochralski" for proper antecedence.

***Allowable Subject Matter***

5. As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).

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6. Claims 2-8, 10,11, 13-18 and 20-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


7. The following is a statement of reasons for the indication of allowable subject matter: The most relevant prior art of reference is that of U.S. Patent No. 6, 503,322 (Schrenker, et al). However, it does not teach nor fairly suggest singularly or in any combination thereof a method or apparatus for producing a crystal growing apparatus for optimizing a cooling rate of a monocrystalline ingot grown according to the Czochralski process, said crystal growing apparatus having a heated crucible containing a semiconductor melt from which the ingot is grown, said ingot being grown on a seed crystal pulled from the melt, said crystal growing apparatus further having a receiving chamber into which the ingot is pulled, said ingot being pulled along a generally longitudinal path toward the receiving chamber, said method comprising determining a first temperature of the ingot when the ingot is at a first position along the path; determining a second temperature of the ingot when the ingot is at a second position along the path, said first and second positions being separated by a distance D along the path; determining a cooling rate of the ingot as a function of a difference between the first temperature and the second temperature relative to an amount of time for pulling the ingot the distance D; generating a signal representative of an error between a target cooling rate of the ingot and the determined cooling rate of the ingot; and adjusting one or more post-growth processing parameters as a function of the error signal thereby to control the cooling rate of the ingot.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Felisa Hiteshew whose telephone number is (571) 272-1463. The examiner can normally be reached on Mondays through Thursdays from 5:30 AM to 3:00 PM. and second Fridays from 5:30 AM to 2:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton, can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-1463.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system. see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866- 217-9197 (toll-free).

  
FELISA HITESHEW  
PRIMARY EXAMINER  
*ALL DONE*